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JUL HE NAVAL AVIATION SAFETY REVIEW

DEPARTING?
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Contributor's Corner

DEPARTURES:

Zero-G No Cure-All

By CAPT A. H. Boquet, USMCR

Author's Preface

Because of the continuing loss of TA-4s (as well as other aircraft) in departure-related accidents, I felt compelled to write this article. I am not an aerodynamics engineer or any sort of an "expert" on the aerodynamics of departures and spins. This article is based strictly on experience as an ACM flight instructor in the TA-4 for the last 3 years and on discussions with military and civilian test pilots: CDR Dick Pottratz and CAPT Tom Carter, NATC, Patuxent River; Walt Smith and Fred Harris, McDonnell Douglas Aircraft, and CDR Mugs McKeown, Navy Fighter Weapons School.

My background is Air Force flight school, Marine RF-4 pilot with WestPac tour, and Advanced Training Command flight instructor. Total flight time is 1800 hours, with 1150 in the TA-4. I was the VT-7 Air Combat Maneuvering Standardization Officer and have attended Top Gun School (ground portion). I am presently assigned to VMA-231 at Cherry Point and fly the AV-8A Harrier.

SINCE the early days of aviation, the military has been concerned with loss of aircraft and aircrews because of aircraft departures from controlled flight. Today, with the cost of one aircraft and its related weapons systems totaling in the multimillions, the continued loss of these weapons platforms in departure/spin accidents is unacceptable. What, then, can reasonably be done to prevent such mishaps? CDR Dick Pottratz (APPROACH OCT '73) recommends spin training in the TA-4 aircraft – an excellent suggestion, but one that undoubtedly sends shivers up the spines of those in lofty places. Given, therefore, that spin flights will not soon be forthcoming for the sweptwing, high-performance community, what other alternatives are available to reduce departure/spin losses?

Basically, knowledge of an aircraft's departure characteristics, whether gained through actual flight testing or through printed matter, will better prepare the aviator for flight in or near this regime. Since intentional departures are not currently authorized, a knowledge of departure/spin characteristics must be garnered from other sources. In the case of the TA-4, Training Squadron SEVEN has developed a departure/spin lecture program which uses as its basis the NATOPS manual and the NATC (Naval Air Test Center) TA-4 Spin Evaluation. These manuals, along with information gathered from military and civilian test pilots, reveal that aircraft departures and subsequent spins can be categorized into two general areas: those resulting from control application and those resulting from vertical stalls.

Certainly, the fact that control application can cause departures/spins is nothing new. Any aviator who has intentionally spun an aircraft knows that one need merely to stall the bird, apply cross-controls, and the result is generally a departure. If the controls are held crossed, and the departure is severe enough, the aircraft may enter a spin. Given, however, that most aviators do not habitually cross-control their aircraft, why, then, a recurring problem with departures?

Some aircraft, notably the F-4, F-8, and A-7, have severe adverse yaw characteristics which can easily result in departure/spin situations. Simply put, the ailerons, which are very effective as roll controls at low angles-of-attack, begin to lose effectiveness as angle-of-attack increases and eventually produce more drag than lift. The drag of the downgoing aileron produces yaw opposite to the intended direction of roll and, when severe enough, can cause total departure in the direction *opposite* to the direction of applied controls.

Oddly enough (to us nonengineers), the rudder, which produces yaw and little roll at low angles-of-attack, begins to acquire effectiveness as a roll control at high angles-of-attack. This phenomenon, known as proverse roll, is characteristic of all sweptwing aircraft. Barring either inadvertent or intentional aileron deflection at high angles-of-attack, aircraft should not be lost – yet, this is not the case. Most departure/spin discussions stop here . . . but perhaps the most infamous area of aircraft losses, that of vertical departures, remains.

An examination of TA-4 departure/spin accident reports would reveal the following statement: "The aircraft was observed in an extremely nose-high pitch attitude." Many, if not most, TA-4 departures occur under exactly such circumstances. The TA-4, unlike the F-4 and other aircraft, exhibits mild adverse yaw

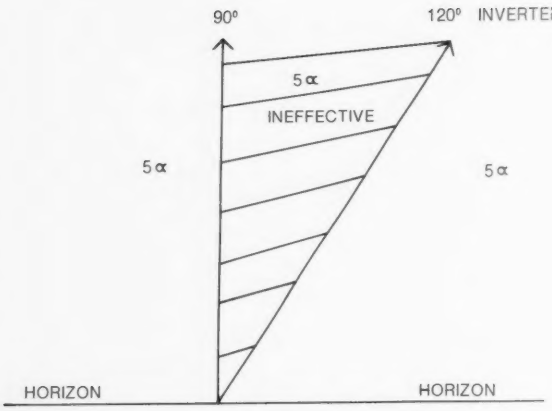


Fig. 1

characteristics and thus has little difficulty with inadvertent departures as a result of control deflection. It is within the latter area of vertical stalls, however, that TA-4s depart and are lost.

The first step toward prevention of such extreme situations is to realize that the age-old, 5-unit angle-of-attack, zero-G maneuver is not the cure-all it is purported to be. Granted, *if* zero-G could be maintained, the aircraft would not stall, and a normal recovery could be accomplished. If, however, a 5-unit recovery is attempted when in a cone of approximately 90 degrees upright to 120 degrees inverted (see Fig. 1), the aircraft will continue upward, trading airspeed for altitude, until it peaks and comes (temporarily) to a complete stop in space – followed by a tailslide and a vertical whipstall, with generally violent yaw and pitch movements. The 5-unit "recovery," contrary to popular belief, will not arc the TA-4 out of a 90-120-degree pitch attitude, but instead, as indicated, will usually cause a violent and extremely disorienting departure.

To prevent such departures, the 90-120-degree cone must not be entered without sufficient airspeed to fly the aircraft out of it. In the TA-4, at or under 20,000 feet MSL and 16,000 pounds gross weight, the minimum airspeed required to fly out of a 90-degree pitch attitude (the worst possible situation) is 150 KIAS. If, at a minimum airspeed of 150 knots, an angle-of-attack of 16-20 units is quickly but smoothly applied and maintained, the aircraft will fly to the horizon passing through the horizontal inverted at 50-80 knots, at which time a normal recovery can be made. If a 16-20-unit recovery is attempted at less than 150 knots in a 90-degree pitch attitude, the aircraft will not have enough energy to fly to the horizon, and a vertical stall will ensue.

(During vertical maneuvers, airspeed drops so rapidly that a pilot must apply recovery controls as soon as he recognizes the situation. – Ed.)

At higher gross weights and altitudes, this minimum recovery airspeed must be increased, and conversely, at lower weights and altitudes, slightly lower airspeed will apply. If this cone is entered and the aircraft "held" there until a lower than recoverable airspeed is reached, the only recourse available is to neutralize controls, lock the harness, and wait. The possibility of such a tailslide, however violent, resulting in a fully developed spin is minimal, and by physically holding the controls neutral, the aircraft will recover nose low after approximately 2000-4000 feet of altitude loss.

(My experience has shown that putting in back stick does not make the departure more violent; rather, it minimizes the pitchdown which sometimes occurs out of a vertical condition. – Dick Pottratz.)

If the severe pitch and yaw rates associated with this vertical departure are misinterpreted to be a spin, any control deflections made at this point could sustain the departure, or possibly cause a spin. Thus, the key to preventing departures of this nature is to enter the 90-120-degree cone with sufficient airspeed to effect a flying recovery and not to rely on the 5-unit, zero-G recovery which is ineffective in this regime. When not in the cone, the 5-unit recovery can be maintained and is, therefore, an effective procedure that will ensure a safe recovery at all airspeeds. It is still a more desirable procedure, however, to roll inverted, if not already so, and pull 16-20 units to the horizon – stressing use of rudder to achieve this roll to prevent the yaw associated with aileron deflection at high angles-of-attack.

The final step in recovering from a departure is to fly the aircraft from a nose-low attitude to level flight. In the TA-4, once the airspeed increases to 200 KIAS, the aircraft is in no danger of spinning and can easily be recovered from its nose-low attitude. Occasionally, however, the *Skyhawk* will at this point enter a rapid roll-rate diving spiral without any conscious control deflections by the pilot. Such an extremely disorienting spiral is thought to be an asymmetrical slat condition, but this remains to be proven. Regardless, while this rapid roll may be disorienting and disconcerting, it is not a departure, but a definite roll-rate (not yaw) and occurs with increasing airspeed. When confronted with such a situation, and with airspeed passing through 200 knots, all that is required is opposite rudder, or aileron, to terminate the roll. Rudder is recommended, however, because to misinterpret a spiral which is in fact a spin could cause pro-spin aileron to be applied; opposite

rudder is always correct.

(For those pilots who have not experienced this "spiral," the aircraft is simply rolling in a vertical, nosedown attitude, and ailerons are effective in countering it at speeds as low as 120-150 knots. It should be emphasized here that the author is talking about the TA-4 Skyhawk only. – Dick Pottratz.)

Once all roll and/or yaw has been terminated, all that remains is to recover from the ensuing dive. This area also receives little attention. Very few aircraft impact the ground in a fully developed spin, or while still departed. Rather, they are flown out of the predicament but fail to recover from the ensuing high speed dive. They generally impact the ground with the throttle set at 100 percent. What must be recognized is that an unexpected and unplanned departure is, to say the least, a very anxious moment, and one's ability to think under such a situation is understandably impaired.

Procedures do exist to prevent departures and to recover from spins; but the "in-between" area concerning actual poststall gyrations is often not covered. Most jet communities recommend the "winding the clock" technique to prevent unwanted, pilot-induced control deflections at this critical time. In the TA-4, this technique is not advisable because, under negative-G conditions, the control stick will move forward of neutral, if not physically restrained, and will thereby contribute to maintaining a negatively stalled condition until it is physically brought back to neutral. Perhaps the best procedure, as the TA-4 begins to depart, is to *follow NATOPS:* positively neutralize all controls, reduce power to idle, check elevator trim in the 0-4-degree (noseup) range, and wait for something to develop. While waiting, check altitude and review what controls to apply if a spin does develop.

Reducing power as the bird approaches departure accomplishes several things. First (and this is unsubstantiated by a formal test program), the severity of the vertical type of departure appears to be lessened with a reduced power setting. Secondly, as mentioned previously, in many of the TA-4 departure accidents, the aircraft impacted the ground at 100 percent. Reducing power as the aircraft departs will ensure a low power setting once recovery is initiated, making recovery from the nose-low attitude less of a problem. And last, but not least, it reduces the likelihood of compressor stalls.

The previous discussion, its recommendations, and procedures have been employed within Training Squadron SEVEN for the last 2½ years with excellent results. Discussion of the 90-120-degree cone and vertical recovery procedures have prepared the student for flight throughout the aircraft's maneuvering envelope. This is not to say that departures do not and have not occurred. All aggressive aviators, at one time or another, have inadvertently exceeded their aircraft's envelope and departed from controlled flight. Once departed, however, a thorough knowledge of poststall gyration procedures, as previously outlined, and a knowledge of spin and high speed dive recovery procedures will ensure safe recoveries from such situations.

Perhaps someday, a Fleet spin-trainer will be forthcoming, or an aircraft that cannot depart. Until that time, the best defense we have against further losses is knowledge of the maximum performance maneuvering envelope of our aircraft, as well as the appropriate departure, spin, and high speed dive recovery procedures.

AIR BREAKS

Flameout. It was a dark and stormy night when the pilot of an AV-8A *Harrier* departed NAS Glenview on an IFR flight plan to MCAS Beaufort. After start, he had noticed low PC-1 hydraulic pressure and, suspecting an impending failure of the fuel flow proportioner, secured it. During climbout, passing FL200, the No. 2 a.c. caution light illuminated, and the pilot secured the port and starboard boost pumps to conserve battery power.

He leveled off at FL350, set 82 percent to maintain .82 mach, and in less than 30 seconds felt a loss of thrust and a rapid RPM winddown. He retarded the throttle to idle, set up a max-range descent, and declared an emergency with Chicago Center. RPM stabilized at 27 percent, and passing through FL250, he attempted a relight. There was no engine response.

The pilot turned his boost pumps on and tried another relight at 275 KIAS, passing FL230. Still no response. He left the throttle at idle, and shortly, the 15-second caution light on the central warning panel illuminated. He checked his JPT and saw the needle reach 750°C, so he closed the throttle to let the engine cool. When the temperature had dropped to 300°C, the pilot selected manual fuel and held the throttle igniter switch for a few seconds. A relight!

He advised Center of his success and asked for vectors to Grissom AFB, the nearest suitable divert field. Center handed him off to Grissom GCA whereupon he executed an uneventful, roll-on vertical landing beyond the arresting gear.

A maintenance crew from Beaufort ultimately enabled the pilot to complete his trip to Beaufort after thoroughly checking the engine and replacing the fuel flow proportioner. There was no evidence of FOD or heat damage.

The best guess of the experts is that the engine flamed out because of a combination of JP-4, high altitude, the fuel control set for JP-5, and low fuel boost pressure. Earlier *Harriers* had been restricted from flight with both boost pumps and the proportioner off, but the restriction was intentionally omitted from NATOPS because of a backing pump in the fuel system of Marine aircraft. In view of the experience in this incident, however, there is now a "Caution" (to cover similar conditions) in the NATOPS Manual.

***Phantom* Hardover.** The F-4B was downwind for landing. During the transition to landing configuration, the pilot had to trim out random right rudder input. At the 90, the *Phantom* continued to skid right.

The first approach was waved off to perform a controllability check. At 5000 feet, the rudder retrimmed to the neutral position for approximately 45 seconds, then went hardover to the right. The emergency quick release lever was depressed, yaw stab aug disengaged, and rudder trim circuit breaker pulled with no effect.

An emergency was declared. The gear was lowered normally, and the utility system intentionally failed. The rudder returned to the neutral position, and an uneventful, straight-in, M-21 midfield arrested landing was executed under LSO control.

Maintenance investigation revealed failure of the aileron/rudder interconnect control amplifier assembly.

The pilot's decision to wave off the initial approach may very well have prevented an aircraft accident had the hardover rudder occurred on short final or on landing rollout above 70 knots. An investigation of landing characteristics under these circumstances was a prudent decision indeed.

Follow the Leader. Wingmen have been taught and trained since the beginning of military aviation to follow the leader. Few aviators ever forget that. Wingmen are also taught to have an idea where they are at all times and to monitor altitude while following No. 1. The latter advice spells t-r-o-u-b-l-e when forgotten or ignored.

A flight of four helicopters took off one night on a point-to-point flight. They weren't in formation, but were flying, in VMC, as a flight of four. The weather was 1600 overcast, with visibility 4 miles in light rain. It wasn't hairy, but the precip caused eyeball problems from time to time.

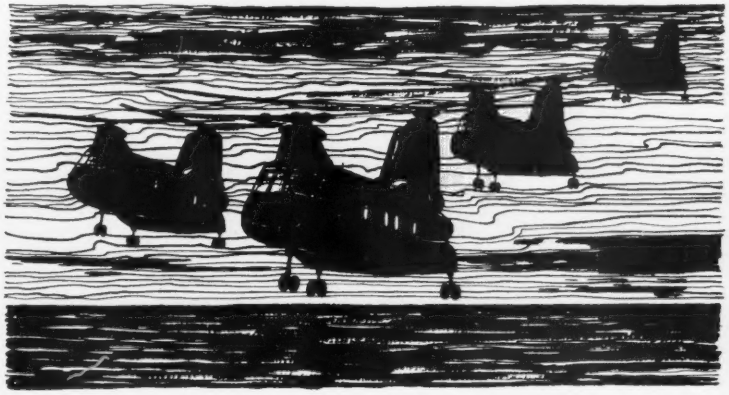
As the flight approached a major airport, lead requested and received permission to skirt the edge of the control zone by following a shoreline. A few minutes later, the leader, then overwater, lost visual contact with the surface. He turned toward the shoreline, but had no horizon and was wrapped in occasional tentacles of fog. The other three helos followed.

During his turn shoreward, the lead inadvertently began a descent. The others followed. He then picked up some lights on the ground which he thought were air traffic. Carefully watching the lights and still descending, he turned back on course. When his copilot suddenly saw the reflection of their lights in the water, he arrested the descent with abrupt aft cyclic. The others stayed right with him.

They bored on, and all eventually reached their destination safely. Consider the following delta sierra actions from the beginning:

- Their supervisor did not designate anyone to lead the flight before departure – just four guys out on a lark.
- The leader, senior pilot of the four crews, conducted no briefing. The three others didn't even know what route the leader had filed.
- Prior to and after the course deviation, the leader didn't communicate with anyone in his flight. He didn't advise of changes in course, altitude, or anything else. Matter of fact, he didn't even tell his copilot what he was going to do.
- The leader all but lost control of his helo and could easily have busted his own and caused his playmates to augur in, too.

It is almost beyond belief that the leader, who had lived in aviation for a dozen years, could have been so casual. It was not smart of the others to have so blindly followed, either. There were no pros in that group gaggle that night.



The story you are about to read is a first person account of the only known successful bailout from the pilot's compartment of an H-3.

Helo Bailout:

ALIVE TO TELL

By LT M. W. DeLorey, USN

HELO bailout – with the current state-of-the-art egress systems – is at best a gamble. Most helo drivers have probably contemplated the dangers of going out their emergency exits. I am a helo copilot who actually did it and is alive to tell.

Our mission – a midair recovery of a BQM jet target drone with a specially configured H-3 – was unusual and demanded the highest concentration and flying skill. Simply stated, MARS (midair recovery system) consists of an H-3 with a sophisticated winch and two engagement poles with hooks suspended beneath the aircraft. The system is then flown into the descending parachute carrying a drone target. On contact, the winch automatically feeds out more than 300 feet of cable to absorb the shock. After the cable is payed out, the winch operator "winds" the drone up into a "carry" position for the return back to base.

Our flightcrew consisted of a highly qualified MARS pilot with more than 4500 hours, three MARS crewmen, and myself – a first tour qualified HAC with over 500 hours in model.

Preflight and launch were normal. When the drone was ready for recovery, the pilot began the final approach toward the engagement chute, starting from 10,000 feet. He set up a rate of descent similar to that of the parachute.

Just before contact, I saw the chute pass well below but left of the aircraft centerline. Because this was my first flight up front on an engagement, I assumed it was too far left to make an engagement. Then, all of a sudden, the aircraft gave a lunge, followed by a loud bang. The aircraft acted as though *it* had been snagged.

From a previous flight on which I was an observer, I remembered that the aircraft had reacted in the same way, but had smoothed out almost immediately because the MARS winch payed out cable to relieve the shock. This time, the aircraft kept wallowing and tugging. Almost immediately, one of the crewmen gave the shocking report, "It's in the tail rotor! It's in the tail rotor!"

For a few seconds, the pilot fought the controls while appraising the situation. Then he issued the lifesaving command to all hands, "Bail out! Bail out!"

The three crewmen in the aft of the helicopter realized they could be of no further assistance. They followed the pilot's orders and went out the aft cargo door. They left the aircraft between 7000 and 8000 feet and had fairly normal parachute descents.

I stayed with the pilot and went through the prebriefed emergency procedures of jettisoning the engagement poles in the hope that it would alleviate or reduce the severity of the gyrations which the aircraft was experiencing. It had no effect.

The helo rapidly started to gyrate approximately plus and minus 20 degrees in all directions with an initial vertical velocity between 5000 and 6000 feet/minute – down. We did not know then that the cable between the engagement parachute and the drone had become tangled in the tail rotor and had not separated. The result was that the aircraft had a suspended weight of 1800 pounds well aft of C.G. in addition to the inoperative tail rotor.

"Bail out!" the pilot called again over the ICS.

I undid my straps. Before I pulled my ICS cords, I gave a call to the controller on the ground over UHF.

"Mayday! Mayday! Tail rotor gone! We're bailing

An H-3 with a sophisticated winch and two engagement poles with hooks suspended beneath the aircraft.

The system is then flown into the descending parachute carrying a drone target.

out."

I unplugged and jettisoned the emergency exit window which tumbled free. I tried to get up on the seat to dive out the window, but the helo was gyrating so wildly that I couldn't. I could only sit on the sill.

It didn't seem possible that only 30 to 40 seconds had elapsed since we had been on our final approach to the parachute. Now, the helo was doomed, passing through 6000 feet, with the pilot bravely fighting for time to give all of his crew a chance to escape. Three crewmen were already clear, and I was sitting on a windowsill.

I remember feeling a very strong slipstream and looking aft. The tail rotor was stationary with parachute

shroudlines streaming from the hub. I was grateful that I would not have to worry about hitting the tail rotor on bailout, but I was still acutely aware of the menace of the main rotor blades.

Despite this being my first jump, I didn't hesitate. I pushed and pushed to get clear but only moved about 6 inches. Something was holding me back. The bottom of my parachute might have caught on the windowsill, or my flight suit might have snagged on an emergency exit retaining tang. Fortunately, I was able to reach the top of the window opening, pull up to my original position, and reexit successfully.

"Almost" is usually not good enough in naval aviation, and when I almost cleared the sponson, the point was confirmed.

The yaw and gyrations of the aircraft carried me aft. I remember hitting the sponson support with my upper body. I was twisted around and carried backward through the triangle formed by the stubwing, fuselage, and sponson support.

I ended up lying on my back, head aft, on the stubwing, wedged between the fuselage and the sponson. I should have slid off the stubwing because it is fairly streamlined, but something caught somewhere and virtually locked me in position.

After struggling, I realized that I could not move in any direction. I resigned myself to the inevitable possibility that I was going to "buy the farm."

During the descent in my supine position, I had no visual reference except the side of the aircraft, the main rotor, and the blue sky. I was expecting impact with the water, but was grateful that I would not know when.

Twenty seconds had elapsed since I had initially exited the window. At this time, the helo, passing through 3500 feet, went completely unstable and pitched 90 degrees nosedown – possibly due to the pilot trying to bail out. I was hurled from my supine position into a standing position against the sponson support.

If the helo had been on the deck, I would have been in a normal standing position on the stubwing. But with the helo like it was, I was horizontal, parallel with the surface of the water.

Instinctively, I had locked my left arm around the support when I hit it. I wanted to let go because I was being doused from head to foot with JP-5 venting from the No. 1 tank. But I hung on because I was being pulled towards the rotor head which was still turning.

Clinging in this position, I decided to let go the next time I felt I would not be pulled through the plane of the main rotors. While waiting, I was able to see out below my visor to find the parachute D-ring. I grabbed the ring with my right hand and waited.

I had become completely disoriented with regard to altitude. I felt I was at 5000 to 6000 feet with enough time to wait a few seconds, but – unknown to me – the helo had entered an unstable descent in excess of 13,000 fpm. When I finally felt myself being pulled in the direction away from the rotor head, I let go and was flipped backwards off the stubwing.

Because my visor was covered with JP-5, I could not see how far from the helo I was. I waited about 3 seconds, then yanked the ripcord. Chute opening shock was extremely severe. I saw stars, and the force fractured my pelvis.

I didn't have time to worry about the first shock because less than a second later, I felt another. This one broke my leg and caused some internal injuries. I didn't know what the second shock was until I realized I was wet. I was under water!

What can be learned or reemphasized from this type of accident?

The most important point is that in aviation you have to be ready. Little did we, while on final approach at 9000 feet, expect to be in our chutes and the helo in the ocean less than 90 seconds later. You must always be physically and mentally ready.

For me, the emergency equipment and its proper use saved precious seconds. If my visor had not been down, I might have hesitated a fatal extra second because of the fuel in my eyes. And if my chute had been loose, my injuries would definitely have been more severe or might even have rendered me unconscious with fatal consequences.

Why has so little progress been made towards allowing the crews to make emergency escapes in the safest and fastest possible manner? Work is being done on ejection type seats for helicopters, but it's not enough. At the present time, a helicopter pilot has only two options during a catastrophic high altitude emergency: bail out or autorotate. Both choices are hazardous, but the odds of success can be improved.

We can and must improve the helicopter crew's chance of success should they have to bail out. ◄

(See also "Escape Systems: Who Needs Them? Helicopters Do!" by CWO R. F. Williams, USMC, in the DEC '71 APPROACH. Next month, APPROACH will present Part II of LT DeLorey's story – his survival and rescue experiences. – Ed.)

What we think of now as "the good old days" were once known as "these trying times."

Ace L.

Bravo Zulu

LTCOL M. P. Sullivan
and MAJ A. G. Bartel
VMFA-323

LTCOL Sullivan and MAJ Bartel, the aircrew of Snake 7-1, an F-4N *Phantom*, launched from MCAS El Toro on a postmaintenance checkflight to be followed by an air intercept mission with a TA-4 bogie.

Following a thorough preflight, routine start, taxi, takeoff, and SID to the warning area, the aircrew completed the applicable portions of the functional check, including rapid acceleration/deceleration, "G" application from -1 to +5 and high/low speed maneuvering.

Contact was then established with GCI, and the first run was completed without incident. On completion of the second engagement at 450 KIAS, 15,000 feet in a 3G turn, LTCOL Sullivan eased back pressure to roll out of the turn and level off, but the stick would not move. Cockpit indications did not reveal any hydraulic malfunction, and the pitot heat was on, reducing the possibility of ice blockage of the bellows.

At this point, the aircraft pitched violently noseup. Unable to move the stick fore or aft, the pilot rolled the aircraft to the left with rudder and aileron. As the nose dropped through the horizon, the roll was reversed to keep from getting excessively nose low.

By continuing the rudder rolls, airspeed was reduced without inducing an excessive nose attitude, and a degree of equilibrium was reached as the aircraft decelerated below 270 KIAS. At this point, the landing gear was lowered; and again the nose pitched up, but slower this time.

Selecting afterburner and retracting the gear, LTCOL Sullivan once again brought the nose back to the horizon with rudder. As the airspeed decreased below 220 KIAS, the gear and flaps were lowered without inducing excessive movement.

The canvas cover on the stick pedestal was removed to look for FOD, but none was found. Isolation of the trim control and stab feel circuit breakers had no effect on the situation.

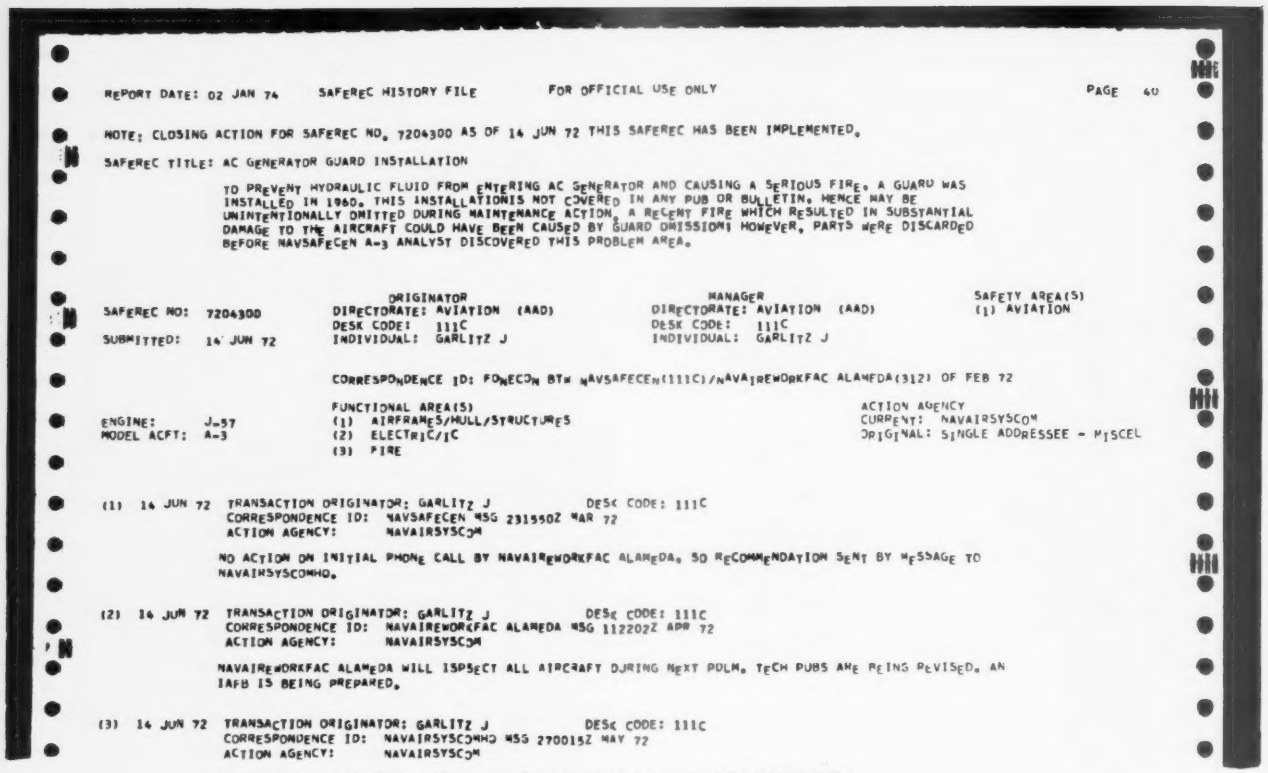
At an airspeed between 145 and 170 KIAS, there was sufficient stick available to control the nose, and a straight-in morest landing was made at El Toro.

During the above evolution, MAJ Bartel coordinated with the GCI site, ATC, and El Toro RATCC anticipating possible recovery utilizing the long runway available at Edwards AFB. When this became unnecessary, he coordinated the recovery at El Toro, while assisting the pilot with altitude, airspeed, and position calls.

Postflight inspection revealed a flashlight lodged in the bobweight torque tube assembly which restricted control stick movement.

LTCOL Sullivan and MAJ Bartel displayed exceptional aeronautical abilities, cool judgment, and knowledge of the maneuvering envelope of the aircraft in analyzing their problems and returning the aircraft safely under difficult circumstances.

Well done!



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REPORT DATE: 02 JAN 74     SAFEREC HISTORY FILE          FOR OFFICIAL USE ONLY                    PAGE  40

NOTE: CLOSING ACTION FOR SAFEREC NO. 7204300 AS OF 14 JUN 72 THIS SAFEREC HAS BEEN IMPLEMENTED.

SAFEREC TITLE: AC GENERATOR GUARD INSTALLATION

          TO PREVENT HYDRAULIC FLUID FROM ENTERING AC GENERATOR AND CAUSING A SERIOUS FIRE, A GUARD WAS
          INSTALLED IN 1960. THIS INSTALLATIONIS NOT COVERED IN ANY PUB OR BULLETIN. HENCE MAY BE
          UNINTENTIONALLY OMITTED DURING MAINTENANCE ACTION. A RECENT FIRE WHICH RESULTED IN SUBSTANTIAL
          DAMAGE TO THE AIRCRAFT COULD HAVE BEEN CAUSED BY GUARD OMISSION; HOWEVER, PARTS WERE DISCARDED
          BEFORE NAVSAFECEN A-3 ANALYST DISCOVERED THIS PROBLEM AREA.

                              ORIGINATOR                    MANAGER                    SAFETY AREA(S)
SAFEREC NO:  7204300    DIRECTORATE: AVIATION  (AAD)  DIRECTORATE: AVIATION  (AAD)  (1) AVIATION
                        DESK CODE:   111C             DESK CODE:   111C
SUBMITTED:   14 JUN 72  INDIVIDUAL:  GARLITZ J        INDIVIDUAL:  GARLITZ J

                        CORRESPONDENCE ID: FONECON BTW NAVSAFECEN(111C)/NAVAIREWORKFAC ALAMEDA(312) OF FEB 72

                        FUNCTIONAL AREA(S)                          ACTION AGENCY
ENGINE:      J-57       (1) AIRFRAMES/HULL/STRUCTURES               CURRENT:  NAVAIRSYSCOM
MODEL ACFT:  A-3        (2) ELECTRIC/IC                             ORIGINAL: SINGLE ADDRESSEE - MISCEL
                        (3) FIRE

(1)  14 JUN 72  TRANSACTION ORIGINATOR: GARLITZ J          DESK CODE: 111C
                CORRESPONDENCE ID:  NAVSAFECEN MSG 231550Z MAR 72
                ACTION AGENCY:      NAVAIRSYSCOM

          NO ACTION ON INITIAL PHONE CALL BY NAVAIREWORKFAC ALAMEDA. SO RECOMMENDATION SENT BY MESSAGE TO
          NAVAIRSYSCOMHQ.

(2)  14 JUN 72  TRANSACTION ORIGINATOR: GARLITZ J          DESK CODE: 111C
                CORRESPONDENCE ID:  NAVAIREWORKFAC ALAMEDA MSG 112202Z APR 72
                ACTION AGENCY:      NAVAIRSYSCOM

          NAVAIREWORKFAC ALAMEDA WILL INSPECT ALL AIRCRAFT DURING NEXT PDLM. TECH PUBS ARE BEING REVISED. AN
          IAFB IS BEING PREPARED.

(3)  14 JUN 72  TRANSACTION ORIGINATOR: GARLITZ J          DESK CODE: 111C
                CORRESPONDENCE ID:  NAVAIRSYSCOMHQ MSG 270015Z MAY 72
                ACTION AGENCY:      NAVAIRSYSCOM

          A-3 IAFB 166 "ELECTRICAL - AC GENERATOR GUARD; INSPECTION OF" ISSUED BY MESSAGE.
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With RECs

Followup Is the Key

TO BE right-on in our total safety effort, all hands are charged with the responsibility for zapping accidents and injuries and must be turned on to all of the accident prevention tools at our disposal. Among the best assets are those available through the avenues of recommendations submitted through official channels by individuals, naval commands, and other activities.

Before we clue you in on what is done with your recommendations, we will define the systems and talk a little about their history and objectives.

There are two basic systems used to track recommendations which relate directly to safety and accident prevention. They are:

SAFEREC (Safety Recommendation) – Any recommendation originated or positively endorsed by COMNAVSAFECEN via official communications which applies to accident prevention and/or personal safety or survival. This system originated in 1963 in what was then the Naval Aviation Safety Center and was composed of recommendations pertaining to aviation safety. In 1969, when the Center was modified and reorganized, the SAFEREC system was expanded to include submarine, surface ship, and shore activities.

AARREC (Aircraft Accident Report Recommendation) – Selected aviation safety recommendations extracted from AARs and endorsements thereto which require action above the

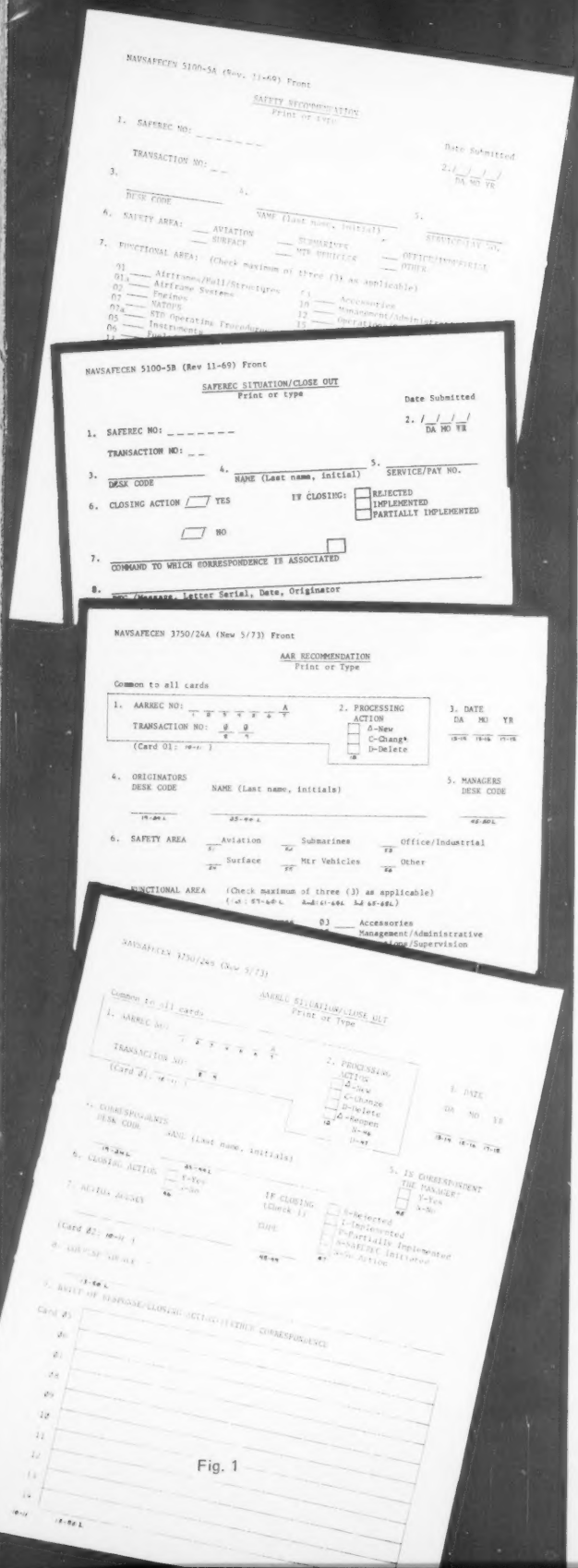


Fig. 1

level of command originating the recommendation. This system originated within the Center's Aircraft Analysis Division and was implemented in 1973.

The objectives of these two systems are:

- To provide a management program to monitor the status and progress of action being taken on these recommendations from the time they are initially entered in one of these systems until such time as they have been implemented, rejected, or formally acted upon.
- To provide and maintain computerized data banks of both active and historical recommendations.

Now that you know the systems, look at how they function:

- The basic recommendation is submitted on prescribed forms (Fig. 1) by the NAVSAFECEN originator. It is then data processed and entered into the computer data bank.
- As situations or actions occur which require transactions (i.e., partial updating, implementation, rejection), each one is properly identified and entered in the data bank.
- When the recommendation is closed, it is then transferred from the data bank active file to the history file. Once in the history file, no further action is normally taken. Should there be some need for future action, the recommendation is then reopened and transferred from the history file back into the active file for whatever time period is necessary to complete the additional action.
- Computer listings of SAFERECs are forwarded to specific authorities as required or requested.
- In late February of this year, the Center began to forward to cognizant TYCOMs and action agencies those computer listings of AARRECs of interest to them. This is to be done at least every 6 months for their info, updating, followup actions, and the like.

Because the AARREC system is relatively new, there have been few recommendations which have had final action taken on them by the responsible TYCOM or other action agency. With SAFERECs, it's another story. Many of these recommendations have been acted upon positively. As a result, safer and more effective methods of operation have been instituted.

There is no way of knowing whether a SAFEREC or AARREC has directly led to the prevention of an accident or injury. But, one thing's for sure, when people use their minds to solve a problem (and submitting solid recommendations is a good example), it will lead to more effective methods of doing things with less risk to valuable assets – both men and material.

Maybe RECs won't completely eliminate mishaps, but they sure can help. Keep 'em coming. ◄

Temporary Change to Navy Aircraft Accident Reporting Procedures

TRADEOFF

A Message for a Formal AAR

THE PRESENT system for aircraft accident reporting, delineated in OPNAVINST 3750.6J, is the end product of long experience. The AAR is designed to provide specific information for aviation safety purposes, and it fulfills these requirements well.

There are, however, two areas which have long been recognized as being less than satisfactory:

- The compilation and assembly of the AAR is a considerable administrative burden.
- The entire AAR processing is unwieldy and too slow for rapid action proposals.

The first shortcoming of the present reporting system is a necessary evil. The AAR is the only source of the complete accident picture, and the Mishap Board feels a natural constraint to prove that a thorough investigation was conducted. The Board also goes to great lengths to substantiate conclusions by reference to their findings of fact. This requires much writing, proofreading, editing, and correcting.

The second unsatisfactory area, in most cases, is mitigated by separate communications on urgent safety of flight items. Nevertheless, many lesser but still significant facts and information of interest to all concerned are not disclosed until the AAR's final endorsement by COMNAVSAFECEN.

OPNAV Notice 3750 of 28 May 1974 promulgated a temporary change to Navy aircraft accident reporting procedures to be conducted on a trial basis from 1 June to 31 December 1974. This change is intended to markedly improve the response time and, in most cases, will negate the requirement for a complete formal report. At the outset, it must be understood that the job of the Aircraft Mishap Board must be just as thorough and conscientious as it has always been. Message reports must contain all pertinent information to permit corrective action and to ensure that all addressees have a complete picture.

The simplified schematic (Fig. 1) depicts the chronological order of reports of the basic AAR instruction (OPNAVINST 3750.6J), the temporary change thereto, the *Special Incident Reporting (OPREP-3) Procedures* (OPNAVINST 3100.6), and their interface.

Consider first the requirements of OPNAVINST 3750.6J. After an accident in CONUS, two actions take place within 4 hours. COMNAVSAFECEN is notified by telephone, and a preliminary message report is sent to a prescribed list of addressees. Within 24 hours, a supplementary message is normally put on the wire.

The *temporary change* will now require an additional message within 10 days entitled "Summary Report of Aircraft Mishap Board Conclusions and Recommendations." This message will repeat the first four items of previous messages, amplify or correct any information previously reported in items 5-17, or indicate no change. Additionally, new items 18-20 will be required. Item 18 will be the Mishap Board's detailed analysis and conclusions of the accident's causal factor(s). Item 19 will be the Board's recommendation(s). Item 20 will be the reporting custodian's endorsement.

Except for the controlling custodian, all commanders who normally endorse the formal AAR will submit message endorsements, within the appropriate time limits (shown in the diagram), to the controlling custodian and COMNAVSAFECEN with information to all other addressees of previously submitted messages.

When all message endorsements have been received by COMNAVSAFECEN, the latter, with the concurrence of the controlling custodian, will advise the reporting custodian whether to submit an abbreviated or formal AAR. If a formal AAR is waived (hopefully, in the majority of accidents), then the reporting custodian will only submit a completed form OPNAV 3750/1 plus an abbreviated MOR form OPNAV 3750/8J direct to COMNAVSAFECEN. Abbreviated MORs in certain cases may be insufficient. If so, COMNAVSAFECEN will direct the flight surgeon to submit applicable forms in those select cases judged to be of special importance in accordance with OPNAVINST 3750.6J, subparagraph

Special Incident Reporting (OPREP-3) Procedures

Navy Aircraft Accident, Incident, and Ground Accident Reporting Procedures

OPNAVINST 3100.6

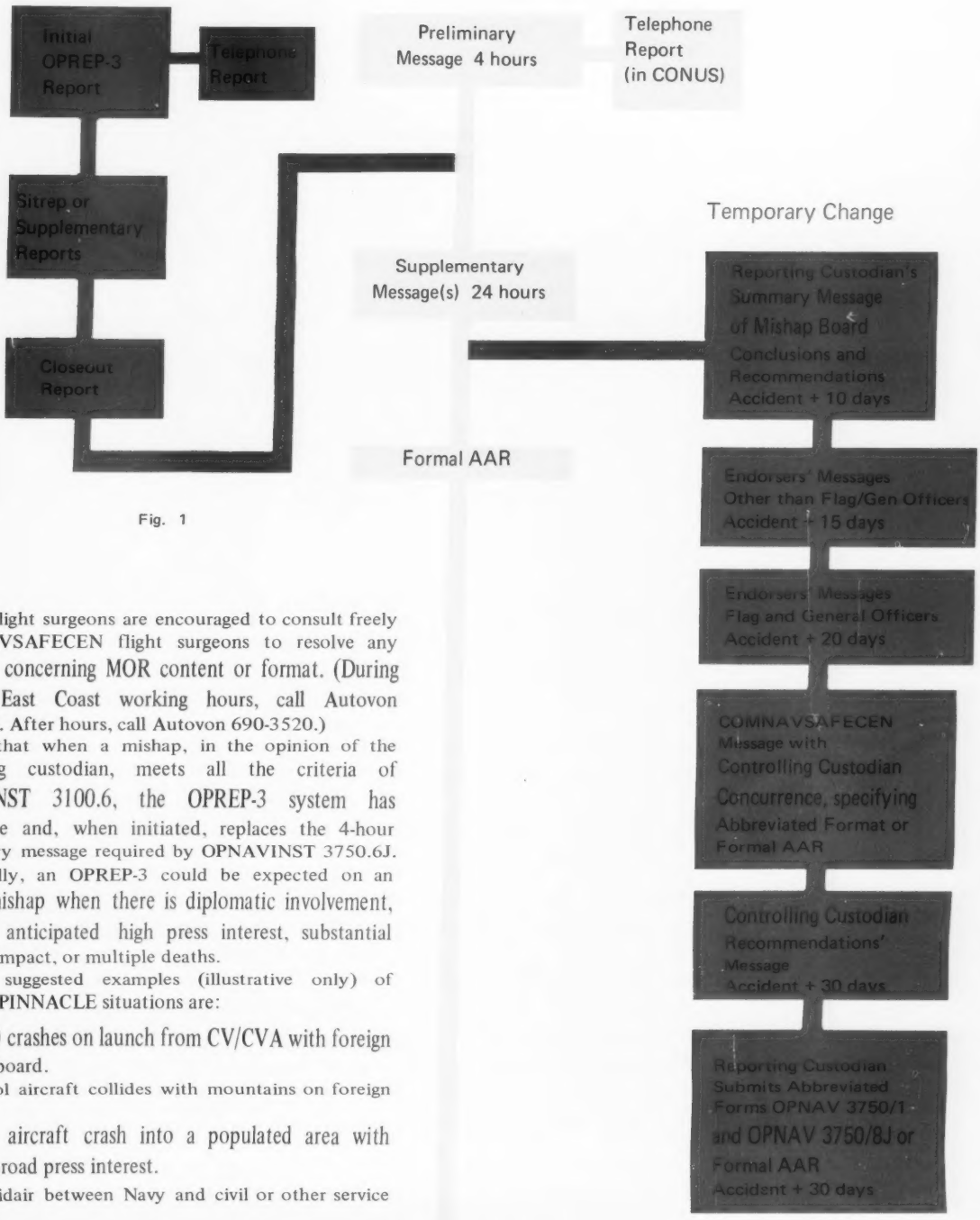

Initial OPREP-3 Report
Telephone Report
Preliminary Message 4 hours
Telephone Report (in CONUS)
Sitrep or Supplementary Reports
Temporary Change
Supplementary Message(s) 24 hours
Reporting Custodian's Summary Message of Mishap Board Conclusions and Recommendations Accident + 10 days
Closeout Report
Formal AAR
Endorsers' Messages Other than Flag/Gen Officers Accident + 15 days
Endorsers' Messages Flag and General Officers Accident + 20 days
COMNAVSAFECEN Message with Controlling Custodian Concurrence, specifying Abbreviated Format or Formal AAR
Controlling Custodian Recommendations' Message Accident + 30 days
Reporting Custodian Submits Abbreviated Forms OPNAV 3750/1 and OPNAV 3750/8J or Formal AAR Accident + 30 days
Endorsements

Fig. 1

704(a). Flight surgeons are encouraged to consult freely with NAVSAFECEN flight surgeons to resolve any problems concerning MOR content or format. (During normal, East Coast working hours, call Autovon 690-7926. After hours, call Autovon 690-3520.)

Note that when a mishap, in the opinion of the reporting custodian, meets all the criteria of OPNAVINST 3100.6, the OPREP-3 system has precedence and, when initiated, replaces the 4-hour preliminary message required by OPNAVINST 3750.6J.

Normally, an OPREP-3 could be expected on an aircraft mishap when there is diplomatic involvement, actual or anticipated high press interest, substantial readiness impact, or multiple deaths.

Some suggested examples (illustrative only) of OPREP-3 PINNACLE situations are:

- COD crashes on launch from CV/CVA with foreign national aboard.
- Patrol aircraft collides with mountains on foreign soil.
- Any aircraft crash into a populated area with probable broad press interest.
- A midair between Navy and civil or other service aircraft.

Some suggested examples (illustrative only) of OPREP-3 NAVY BLUE situations are:

- Ramp strike which careens into the pack – multiple aircraft or ship damage affecting CV/CVA readiness (if deployed, this could be PINNACLE).
- Flag officer and staff involved in a helo crash on approach to ship.
- Off-base crash with substantial damage or injury in which there is local press interest.
- On-base crash resulting in deaths or multiple serious injuries with high local press interest.

Each of the above examples could require the procedures of OPNAVINST 3100.6 until closed out. COMNAVSAFECEN will pass pertinent safety-related information to addressees who would otherwise have received normal preliminary and supplementary messages but do not receive OPREP reports (e.g., NAVPRO, NARF, etc.).

Occasionally, the OPREP-3 system will be initiated on a mishap by a commander other than the reporting custodian (such as an accident remote from Homebase). In such cases, the reporting custodian will submit the supplementary message report required by OPNAVINST 3750.6J and the 10-day summary report required by the temporary change.

The *temporary change* does not affect other required investigations and reports (JAG, NTSB/FAA, Special Weapons, etc.). Mishap Boards will retain photos, schematics, sketches, statements, medical evidence, and diagrams until advised by COMNAVSAFECEN.

Controlling custodians will submit interim comments on this reporting method to Commander, Naval Safety Center, information CNO (OP-05), by 1 September 1974 and final comments by 15 January 1975. ◄

Military Pilots Read and Heed

Altitude Callouts

THE NTSB (National Transportation Safety Board) has urged utmost efforts by all airlines, air taxi, and commercial operators to remind their pilots continually of the importance of such instrument approach procedures as altitude callouts.

This safety recommendation was made in a report which showed that pilots of an airliner which brushed trees short of its landing runway later claimed to be unaware of a company requirement that they call out minimum descent altitude.

The airliner struck trees some 6900 feet short and only 15 feet above the threshold elevation at a civilian airport last spring. Right wing leading and trailing edge flaps were damaged, but the pilot was able to wave off and land safely the next time around – with no injuries to the 37 souls onboard.

The probable cause was failure of the flightcrew to adhere to established procedures. The aircraft descended through MDA to the tree-strike 349 feet below. *(That's a delta sierra for sure. – Ed.) MDA is the lowest altitude to which an aircraft on a nonprecision instrument approach may descend if the crew at that point cannot make a visual approach and landing.*

Misreading of altimeters was ruled out as a possible cause by investigators, and they reported that there had been no malfunction of the aircraft's five barometric and radio altimeters or altimeter error of enough magnitude to have caused the pilot to descend 349 feet below MDA.

To combat such inattention requires professional standards maintained by alertness and cockpit discipline, by strict adherence to established procedures, and by prompt, positive correction of any deviation.

Adapted from *NTSB Report*

"Minimum descent altitude" means the lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

FAR 1

Even an experienced pilot can be lulled into a false sense of security by a 12,000-foot runway. This can mean big trouble when it's . . .

HIGH AND HOT

AFTER a normal start, an A-4C pilot satisfactorily completed his poststart checks and taxied to the duty. The runway was 12,769 feet long at an elevation of 5352 feet MSL. The temperature was 89°F with a pressure altitude of 5180 feet.

Incredibly, this highly experienced pilot (with more than 4000 hours flying time) took the runway without computing his maximum gross weight for takeoff. Had he done so, he would have found that at 20,215 lbs, his bird was approximately 1400 lbs over the recommended gross weight for takeoff under existing conditions. Furthermore, he failed to compute takeoff distance, speed, and line check speed.

On takeoff, he rolled for approximately 6500 feet before becoming airborne. Acceleration was very slow, and rate of climb negligible. Because of rising terrain on runway heading, the *Skyhawk* was forced to make a right turn. The aircraft began to settle in the turn, and the pilot ejected, wings level, at an altitude of about 300 feet AGL.

The ejection sequence was normal, and the pilot was rescued with only minor injuries. The aircraft was destroyed.

This is a graphic reminder of the need to know takeoff weights, speeds, and distances *all of the time.* If takeoff data is not readily available, compute it. Why break an airplane to find out you needed more runway?

Heads up for summer!

A Question for Skippers:

"HOW about it skipper, do you, like some other COs, find safety too costly?"

"Why, of course not! Safety can't be too costly in my command. Just last week we spent a small bundle to get our ASO that . . . "

A good lip-service answer, skipper, but take another look around. What is it your ASO really wants to spend? And if you give him his share, what'll he save you in the long run? Not much, if all he does is give 5-minute blurbs at AOMs and keep a sierra hotel bulletin board. Rap with him and find out what he really wants to spend, and how little it costs, and maybe – just maybe – your outfit will end up on the plus side safetywise.

Spend! Cost! What kind of bread are we talking about, anyway? Is it money? Hell, no! Even in these days of austere funding, there always seems to be enough green stuff available to meet our most important operational commitments.

Then, what kind of asset do we have in mind? *Man-hours,* skipper! *Time!* That's what your ASO wants to spend a little of, for, by so doing, he can save you money and man-hours.

Each aviation unit has X number of officers and men and an average of 30 days a month to do its job. There are no extra man-hours available in a pinch and no slack when things get tight. No one knows this better than your maintenance officer. Someone crunches ole' 02, and one night three of your AMHs end up in the hospital after doing battle with a telephone pole in downtown Port City, and BINGO, you're in deep, serious trubs.

So, who do you turn to for help before accidents and injuries occur? Your ASO, skipper. He's the one guy you own who has the primary job of seeing to it that your assets, both dollar and man-hour, are conserved.

Look at your ASO as kind of a stockbroker. In this case, safety is the stock; and if you want to make it big,

By LCDR Jay Russell
ASO VAW-125

HOW DO YOU SPEND YOUR TIME?

"you have to spend a little time and money." Like the stock market, your spending can result in great dividends – quickly. But unlike Wall Street, investing big in safety stock is actually risk-free, and the only losers are those who don't invest.

Now that we've set the stage, let's take a look at how your ASO wants to spend the man-hours you will hopefully allot him.

Safety Planning. The ASO will want to expend some of these hours with you and others preparing programs. The command aviation safety council is his best planning and policymaking tool. But, that means the CO, XO, and all department heads are tied up, and that is costly. Or is it, really? How about devoting some 15-20 minutes per month at the beginning of a weekly department head meeting? If your ASO is right on, he'll have an agenda prepared, and you shouldn't have to spend more than 2 man-hours combined. In this way, you'll be able to generate safety policy acceptable to all departments.

Safety Organizing. The ASO will want at least ½-hour per month with your key enlisted personnel. This can be accomplished by attending the enlisted safety committee meetings and by meeting with key shop supervisors. (Uh-huh, I've heard it . . . "We can't do without these key men that often. This really hurts the maintenance effort.")

What are we talking about here in the way of time – 50 man-hours per month at the most? This is the opportunity to implement the policy already decided upon and to get valuable feedback from those in-the-know.

The other alternatives are to write directives (who do they "turn on"), forget it (what a way to "zap" the safety effort), or meet all of the shops separately. (That'll expend six to eight times as many man-hours.)

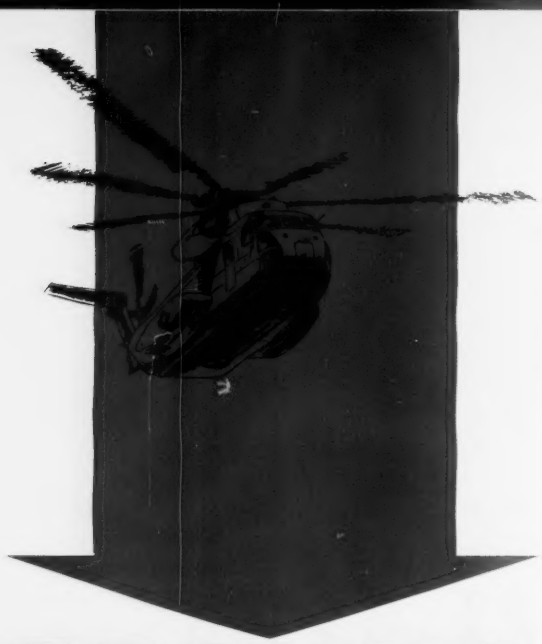
Getting down to basics, the opportunity to organize these key men will save hours later. Think about this if the minutes of your enlisted safety committee meetings show a lot of absentees.

Safety Communication. Here's where those little expenditures of time go far. The 5-minute blurb at the AOM – the 10-minute talk at the all-hands meeting – the extra minute or so at quarters to read one of those items in the POD. You know, the ones that tell you not to pop champagne corks in your wife's eye on New Year's Eve – or the big red arrow showing you that Miss April wants you to "Do It Better." It's 5 minutes here and 10 there that add up to a lot of man-hours . . . but they also add up to an attitude of safety awareness.

Safety Directing and Controlling. This is the sticky wicket. You can't run an effective safety program unless the ASO is given some clout by the CO. For instance, supposing Sammy Slipstick becomes overdue for his NATOPS check, and the ASO has him grounded. Sure, Sammy is going to blow his cool; but when he realizes the CO is firmly behind the ASO, he'll split for the NATOPS officer pronto. Chances are, the rest of the pilots will get the word and make damn sure they're not overdue for their checks. Let's face it skipper, your ASO has to have a stick as well as a carrot.

Planning, Organizing, Communicating, Directing, and Controlling. Kind of resembles that first year management course you took a couple of years ago, skipper? Right on! That's the ticket, boss. Your ASO, if he's in the groove, wants to be your safety program manager. He's going to need man-hours to get his program together and keep it together. He'll also bug you for other tools of the trade.

But, remember this, Cap'n, he'll save you man-hours as time goes by. How? Well, that might be difficult to prove directly, but why don't you ask the CO next door how many man-hours and dollars he expended investigating that last accident in his squadron . . . or was that YOUR squadron? ◄



GROUND EFFECT

• A TA-4 pilot poured the coal to his J-52 and released brakes. The aircraft weight was close to max gross, temperature on the runway was 44°C, field elevation was 1800 feet, winds were on the nose about 10 knots, and the concrete in front of the pilot stretched for about 2 miles.

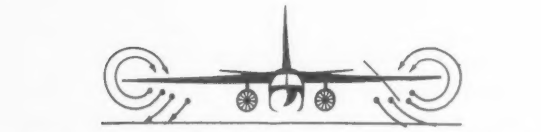
Three minutes after going to full cob, both pilots ejected successfully just before the *Skyhawk* plowed into a rise in the terrain and became pieces of burned and twisted metal.

Later, the young pilot was overheard saying, "We checked speed and runway distance right on the pipper, but there must have been a power loss we didn't recognize. We never could establish a climb."

• During the "other" war (WWII), a very thankful pilot and crew discovered they could keep their crippled bird airborne even though they had lost two of their four engines and had hours to fly to reach land. At first they thought they'd have to ditch. Not only did they manage to stay airborne, but after 3 or 4 hours, they were able to establish a climb. The aircraft eventually landed safely.

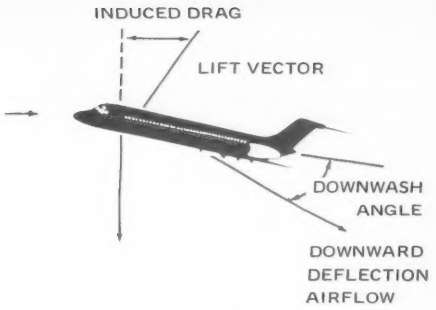
• A helicopter that had lifted and was carefully hovered by the pilot to ensure all was OK, crashed and

WING OUT OF GROUND EFFECT

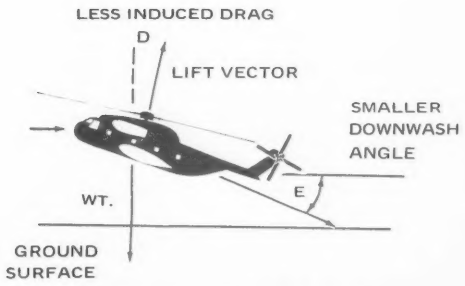


WING IN GROUND EFFECT

Fig. 1



AIRCRAFT OUT OF GROUND EFFECT



AIRCRAFT IN GROUND EFFECT

Fig. 2

burned within 100 feet of takeoff. No one was hurt.

In each of the above examples, the condition known as ground effect played an important part. For example, the TA-4 became airborne in ground effect, but under existing conditions still might not have been able to climb if the pilot had had 50 miles of flat terrain in front of him.

The big aircraft lost two engines and could not remain airborne at altitude, with available power, but was able to remain airborne when it descended to 20-40 feet above the surface, in ground effect.

The helicopter crashed because, as it began to move, it lost *effective* lift before achieving *translational* lift.

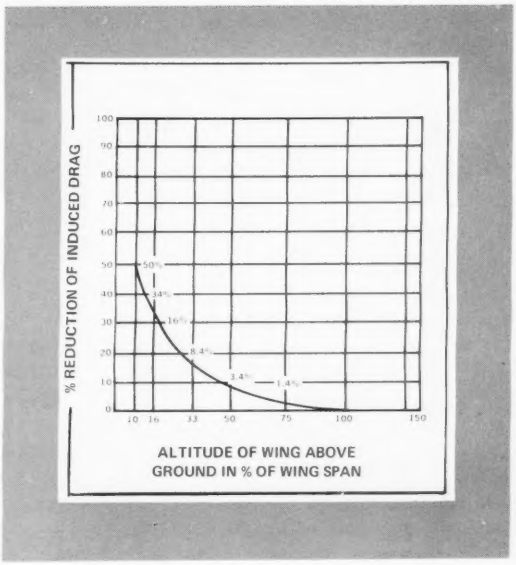
What Is Ground Effect?

In a nutshell, when aircraft are flying very near the surface, there is a change in the three-dimensional flow pattern because the local airflow cannot have a vertical component at the surface. Therefore, there is a reduction in the upwash, downwash, and tip vortices.

At the same angle-of-attack and airspeed, an aircraft in ground effect will require less thrust to maintain that airspeed and will have a higher lift coefficient than will the aircraft out of ground effect.

Figure 1 demonstrates the influence of ground effect on the flow of wingtip vortices (also applies to rotors).

The change of airflow in ground effect restricts the vertical component and influences the lift vector. The required lift is produced, but with a reduction in the downward deflection of the airstream. This reduction in downwind angle results in less induced drag because the lift vector is rotated nearer vertical (Fig. 2). Continued



The graph illustrates lift coefficient. Notice the large reduction in induced drag the closer the aircraft wing or helicopter rotor blades are to the surface.

There is another good illustration that may explain ground effect (Fig. 3). As the airfoil nears the surface, the downwash (W_1) cannot fully develop. The decrease in downwash (W_2) reduces the induced angle (ai), and the lift vector (L_1) becomes closer to vertical (L_2). In other words, if the same wing angle-of-attack is maintained in ground effect, drag will decrease (Di_2) and the lift will increase (L_2). It is clear therefore, that for a given weight aircraft, in ground effect, smaller wing and reduced thrust will be required to maintain flight.

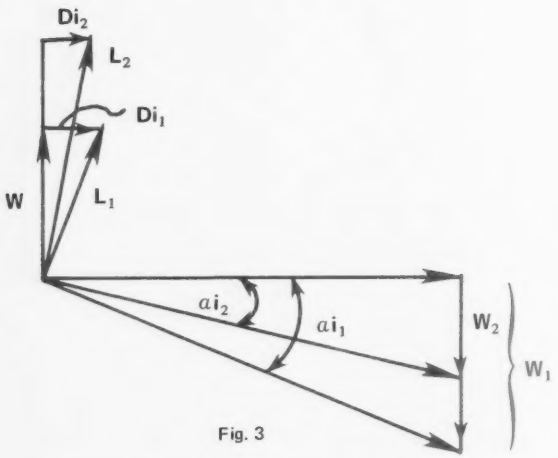


Fig. 3

State one depicts the conditions remote from the ground; state two is in ground effect.

Ground effect has both advantages and disadvantages as evidenced by the examples. It can be used by any pilot to increase operational capabilities when a specific situation arises, but the necessity to exceed normal performance situations is rare and can usually be avoided with *careful* planning, emergencies excepted.

An example of an emergency situation would be the need to transport an overload in a rescue, for instance, when it is not feasible to return for a second load.

Light aircraft frequently will float well down the runway during landing. Usually, this is caused by the pilot leaving enough power on in ground effect creating sufficient lift to keep the aircraft airborne far past the touchdown point.

Navy multiengine pilots who spend a large part of their careers over water are reminded that in ground effect, single-engine flight can often be maintained in ground effect (beats ditching) and that increased range is possible when you're down to fumes. ◄

Come Weep With Me

TWO perfectly good H-53s had been parked on the line. The crew manned one and turned it up. Shortly thereafter, the rotorwash flapped a tail rotor blade into a main rotor blade of the unmanned helo.

It could have been prevented.

Unbeknown to the pilots, a linecrew had towed the soon-to-be-damaged helo into their 7-o'clock position.

The HAC asked his crew if the area was clear to lift and pulled pitch. He stopped before becoming airborne and requested verification of blade straps on the other helo.

His crewman confirmed blade straps installed (main rotor blades only), so the pilot lifted.

When advised of damage to the other helo, the HAC landed and shut down. He had received incomplete information and had also misjudged the effect of his rotorwash.

Further, the linecrew had spotted the damaged helo *between* spots in violation of air station policy.

"Several personnel observed the entire incident, yet none took any action to stop an unsafe situation. This is another example of the accident that could have been prevented by any number of people." ◄

Blowout!

ON THE second leg of a routine cross-country training flight, a student pilot in the rear seat of a TA-4J performed a night instrument takeoff under the hood. The flight had originated at NAS Pensacola bound for NAS Kingsville with a fuel stop at NAS Dallas. The instrument takeoff was uneventful, and the climbout progressed normally. All canopy checks had been completed, and passing 10,000 feet, pressurization was also checked and found normal.

The aircraft had been cleared to FL240 and was passing FL190 at 300 KIAS when the left rear quarter panel of the canopy blew out with explosive force. The instrument hood was immediately sucked out.

The student ducked, inadvertently forcing the stick forward, causing the aircraft to pitch nosedown. Quick to react, the instructor took control, reduced power, extended speed brakes, and began a descent to below 10,000 feet. Turning back toward Dallas, he squawked "emergency."

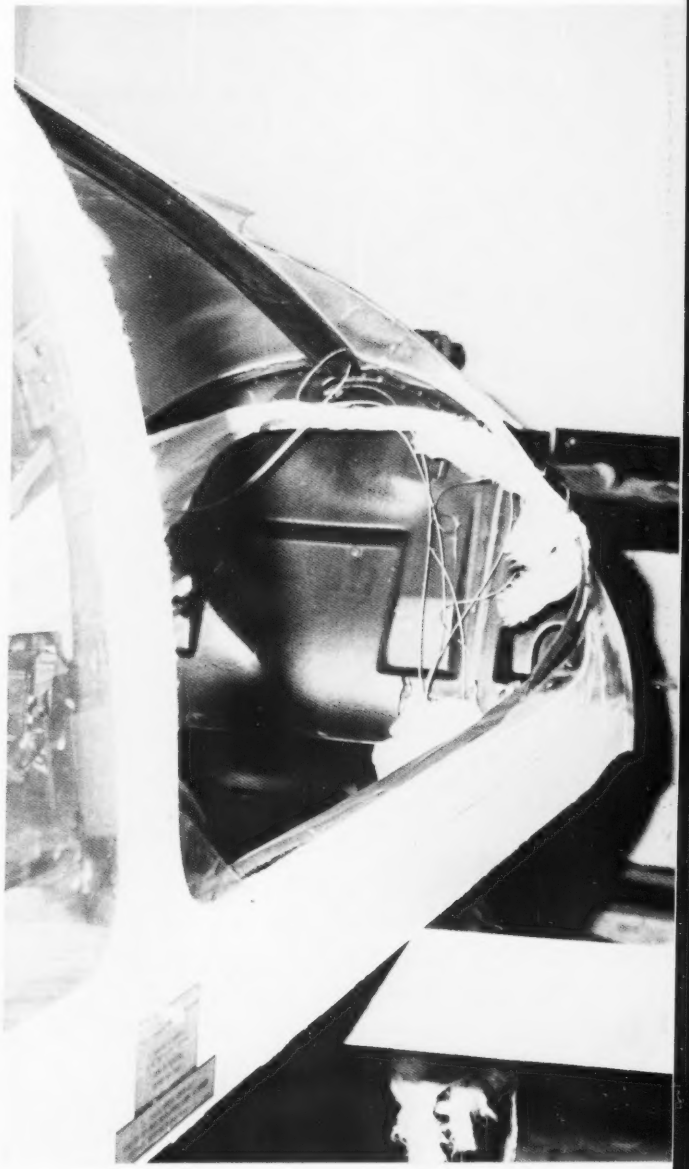
No communication, ICS or radio, was possible until the aircraft slowed to below 230 knots. Although engine instruments indicated normal, excessive yawing and subsequent vibrations and rumblings in the airframe indicated to the instructor that there was possible control surface damage and/or a FODed engine.

The aircraft was dirtied up approximately 10 miles from Dallas, at 5000 feet, to check landing characteristics. The check was favorable. The instructor then executed a straight-in, low precautionary approach to NAS Dallas with an uneventful landing and rollout.

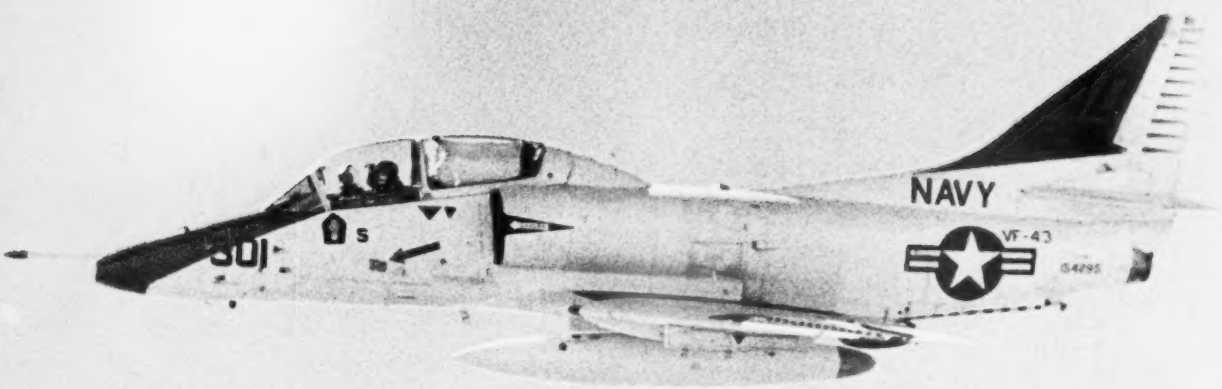
Later investigation revealed that material failure caused loss of the canopy quarter panel.

Throughout the emergency, the student pilot aided the instructor as much as possible, tuning the TACAN, dialing radio frequencies, and advising the instructor of arresting gear locations and limitations. Center and Approach controllers were very helpful and cooperative and without a doubt aided in easing a critical situation.

It should be noted that wearing all the proper flight equipment was probably a factor in preventing injury. Although decompression proved to be no problem, dirt and nav pubs blown about the cockpit posed a hazardous situation that might have complicated the situation had the pilots not had their visors down and oxygen masks on.



The professional manner in which this emergency was handled speaks highly of the instructor, his student, and the concerned controlling agencies, and probably saved a valuable aircraft. ◄



Fighter Squadron FORTY-THREE, as a result of the 1974 Instrument Standardization Conference held at Cecil Field in February, has agreed to assume clearinghouse responsibility for questions and issues concerning jet instrument flight procedures in CONUS.

Pertinent matters requiring introduction, refreshing, interpretation, or clarification will be discussed periodically in APPROACH articles prepared by VF-43. Such articles are *neither intended nor authorized* to establish policy, rules, or regulations, or to override or conflict with existing regulations (i.e., FAR, OPNAV, etc.). They are, instead, part of a continuing process to educate jet aircrewmen relative to instrument procedures and/or application of various instrument flight rules that govern anyone flying naval aircraft, particularly in the high altitude environment.

INSTRUMENT CHECKS

SITUATION:

Gas Gulper 123, on a radar handoff from Cyanide Center to ZIP Approach Control, checks in on the ZIP 250/55 at FL240 assigned, proceeding direct to the IAF (ZIP 190/29), and is immediately "Cleared for approach, report the arc."

ACTION:

Gas Gulper 123 may, without further clearance, proceed direct to the IAF:

(a) At FL240 and penetrate on arrival, from FL240, providing he can safely meet the approach profile altitude requirements. *(Recommended altitudes need not be adhered to!)*

(b) Descend enroute at pilot's discretion to the first *mandatory* altitude shown on the profile, then follow the remainder of the approach as published, providing minimum altitudes for IFR operations (MEA, MSA, or ESA, etc.) are observed enroute to the IAF from the point at which the clearance is given.

DISCUSSION:

The phrase "cleared for approach" in the example above may well be poor or inadequate, but, as used, is meant only to inform GG 123 that the controlled airspace between him and the completion of the approach is clear of known IFR traffic. He is authorized or "cleared" to execute the approach as published and is responsible for complying with applicable minimum altitudes (including minimum reception altitude if applicable) from his check-in point to the IAF and the built-in safeguards of the published approach.

Normally, clearances will specify altitude – "Maintain FL240, expect approach clearance at . . ." or "*On arrival*, cleared for approach . . ." – thereby eliminating possible confusion. Nevertheless, should you find yourself confused in any situation involving ATC, it is no one's fault but *yours* if you remain confused. Shed some of your pride and clarify the situation! "Approach, GG 123, level FL240, am I cleared to one six thousand?"

REFERENCE:

TATC (Terminal Air Traffic Control Manual) 7110.8C, Sec. 14, paras 1020, 1021, 1023; interpretation by FAA Facility Chief, NAS Oceana, with concurrence of FAA representatives to 1974 Instrument Standardization Conference, NAS Cecil Field, 11-12 FEB '74.

COMMENCING:

Although the meaning of this term is clear to most approach controllers throughout the U.S., "commencing" is incorrect phraseology often used to indicate that we have started an instrument approach from some IAF *other* than "marshal."

Remember – we "depart" a fix and "leave" an altitude, sometimes together, as is the case with most IAFs – "Gas Gulper 123 departing IAF, leaving one seven thousand."

REFERENCE:

FLIP Section II, Enroute Procedures.

GCA "SHORT" PATTERNS:

GCA controllers are no longer formally trained, navywide, in "short pattern" work and may not understand your request for special handling, either in a training situation or in an actual emergency, if you use a phrase like "minimum fuel" without amplifying remarks. Minimum fuel merely means that you can accept no undue delay, and nine times out of ten will quite likely (and properly) result in a standard pattern GCA.

A requirement for a "short" pattern is an unusual situation, and (like most unusual situations involving you, the aircrew, and ATC) will best be resolved by communicating to ATC your exact, specific requirements and any anticipated abnormal actions on your part – "Zippo Radar, GG 123, emergency fuel, 6 minutes remaining (smoke in cockpit, etc.), request short pattern (immediate landing) with 10-second warning prior to intercepting glidepath. I'll be at 230 knots, holding my gear until 10-second warning."

Bear in mind – if you have not practiced special procedures for emergency situations, any procedure other than just "shortening up" the pattern may result in more trouble than you had to start with!

Time to Go!

ONLY you can make the decision.

WHETHER the ejection occurs at FL200 in controlled flight or at 100 feet outside the envelope, the decision will have been made – not necessarily then, but some time in the past – perhaps without your knowledge.

Only you can design mechanisms within yourself to trigger an automatic sequence that will propel your body from the warm, comfortable atmosphere of your cockpit. How and when you elect to activate this sequence will remain a function of what has transpired until that time when something inside you says – EJECT!

We have to face certain facts if we are to fly today's high-performance aircraft. One of those facts is that, no matter how good stickmen we are, there may come a time when we are no longer masters of our aircraft, but simply passengers. When this occurs, whether we ride it in or eject makes no difference to the fate of the bird. If it's doomed, so are we if we elect to remain passengers.

The decision to eject has never been a very popular one, especially for the guy who has to reach down, pull the handle, and by so doing, admit that he has washed his hands of the whole unpleasant matter. When a pilot does this, he has said to himself, "I can't hack it anymore. It's too much for me." For any self-respecting pilot, it's a difficult pill to swallow.

What really bothers us is the fact that we might, just might, be wrong. Perhaps there is something else that could have been done to save the airplane. But one thing's for sure, if a pilot's decision to stay with the bird is wrong, he's *dead* wrong.

There's an old axiom that says, "Buddy, when it comes time to step over the side, you'll know it."

This is true. The catch is to recognize *the time* early

enough.

Two pilots faced this problem when their T-33 flamed out at FL200. Both agreed to jump at 8000 if they were still IMC.

No change at eight – they were still in the weather, with no airstart. But they decided to hold on down to 6000 . . . and so on down to 2000 where, still in the weather, with a dead engine, the rear seat pilot ejected. The pilot in the front tried to go, but the system refused to cooperate. He rode it in.

Had they stuck to their original decision, *both* pilots might be alive. The pilot up front would have had time to at least give it a try over the side – it's been done before.

The troops who beat the bushes for better and more efficient ejection systems scratch their heads when the statistics show no improvement in survival rates even though our systems are better than ever. A possible answer is the *"since the system is better, I can stay with it longer"* syndrome.

It seems like a wise move for every pilot to take a critical look at the ejection envelope for his particular aircraft. Does it take into consideration bank angles, yaw, or roll rates? How about rates of descent? Make certain you know all the capabilities of the system.

Aside from the ostrich pilot who refuses to admit that the decision will ever confront him is the jock who, while in the companionship of his readyroom flying buddies, makes such off-the-cuff predecisions as, *"I don't know of any airplane that's worth killing myself for,"* or *"I'm sticking by NATOPS. When 10,000 shows and I'm still out of control, I'm leaving,"* or maybe, *"If things don't look real good at high key, adios."*

Have you heard these gems? Maybe you've said them yourself.

I had a friend who made those remarks, but while dead-sticking, wrapped it up in a ball of flame short of the runway after he admitted over the radio, at low key, that things didn't look right to him. Why did he stay with it? He sensed the aircraft was doomed. Everyone on the ground recognized his peril and advised him to get out – yet he's dead.

We have the statement of one pilot who delayed, but made it.

"Because of an innate fear of meeting accident investigation boards, I decided to make one more effort to recover."

Was he subconsciously aware that the airplane was going to crash in spite of what he could do, yet had to give it one more chance? Fortunately, he ejected in time. The harness he shed after getting on the ground was found between the two halves of the seat. He knew it was a desperate situation before he tried "once more." He knew the odds were against him.

Have you ever known of an accident board that chastised a pilot for leaving an airplane "when the odds were against him?" I haven't.

Pilots *have* ejected prematurely. At least, that's the decision made by those who sort through the facts after an accident. Quite possibly, those pilots who sit in judgment could have saved the machine.

But then, on the other hand, could it be that the pilot who ejected early would have been doomed, along with his aircraft, if he had attempted to salvage a desperate situation? The task may have been beyond his capabilities, and so, in reality, the ejection was not premature from the point of view of that particular pilot's flying ability. The *time* for one pilot may not be the *time* for another in terms of proficiency.

Fortunately, the picture is not as bleak as it appears.

There is a low premium insurance policy available to all of us: *Know your equipment, and know your limitations.*

One has a definite effect on the other. The more familiar you become with your machine, the more confidence you gain in your ability to cope with a sticky problem. If you have the feeling that the situation is out of hand, you can bet your last dollar (you might as well) that it is.

Don't let pride take you down the drain. Believe it or not, some situations *are* beyond anyone's control. The ones that really give us trouble are the borderline cases. If the engine blows and the aircraft is engulfed in flames, there is no doubt about what to do. But if it flames out at low altitude, we might try a quick airstart, then be tempted to try just one more and . . .

This is the kind of emergency that demands knowing your bird.

In many instances, ejections that occur outside the capability of the system didn't have to happen. The pilot put himself there by delaying his decision to eject.

We're going to lose some pilots in the coming months. The cause will be stated simply: " . . . pilot delayed decision to eject until successful operation of the ejection sequence was impossible." This implies several conclusions, most important of which is that it was possible for the pilot to have ejected within the safe envelope.

The intent of this article is not to encourage you to fly with one hand on the ejection handle. Far from it. We must do everything possible to get our sick bird back on the ground in one piece.

We've had enough sacrificial attempts to save an obviously hopeless situation with the result that both pilot and aircraft were lost. An aircraft is replaceable.

Don't let your final thought be, "I've stayed with the aircraft too long."

Adapted from *Aerospace Safety*

Anymouse

'Twixt Cup and Lip

TRY this one on for size and see if it doesn't turn your chin whiskers another shade of gray. A four-plane *Stoof* flight departed NAS West Coast for the over-mountain transit to NAF Desert Bounce. Shortly after takeoff, No. 2 aircraft assumed the traditional port echelon position of a balanced parade.

The flight was uneventful until No. 2 aircraft slid back into starboard echelon for the approach to the break. At that time, No. 3 reported that No. 2 was trailing oil and smoke from his port engine. Number 2 pilot, unable to see the oil and smoke, declared an emergency, broke clear of the flight, and landed. So, what's so exciting about all this? Let's go back to the departure from NAS West Coast and pick up a few incidentals the flight was not aware of.

It seems that LTJG Alert, at home on leave and soaking up SoCal rays in his backyard, was admiring the precision of the *Stoof* flight overhead. All appeared in order except for the No. 2 aircraft which appeared to have smoke trailing from his port engine. Since LTJG Alert was attached to a sister *Stoof* squadron, he immediately called his duty office to inquire if they had a flight out, for one of the birds seemed to have a little problem. Next, he called approach control to notify them of the situation.

Now, hang on, for this is where the fun starts. The parent squadron duty office was notified, and in turn the CO, maintenance, and operations officers, and NAS operations officer. The flail flag was two-blocked. NAS operations reported back to the parent squadron that approach control had contacted the flight and they had elected to continue. The maintenance officer's heart resumed normal operation . . . figuring that the problem must have been minor, otherwise the pilot, a former safety officer, would not have flown over the mountains with an unhealthy engine. After a brief period of time, the maintenance officer, LCDR Stillworried, contacted Desert Bounce tower and was informed that the aircraft in question was safely on deck with the port engine shut down.

The next conversation the maintenance officer had was with the pilot, concerned and curious as to why he elected to fly over the mountains with a bad engine after notification by approach control. The pilot stated that the flight had received no such call concerning a problem. Oh, well, back to the drawing board.

LCDR Stillworried next called approach control to see what the story was. Approach responded that they did not personally contact the flight, for it had been handed off to Center at the time of the initial call to them. Enter now a

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. These reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

REPORT AN INCIDENT
PREVENT AN ACCIDENT

new variable. A review of the tapes revealed that Approach did inform Center of the fact that the No. 2 aircraft was trailing SMOKE. The center controller misunderstood the transmission and thought that approach control said the No. 2 aircraft was trailing SLOW. So, Center contacted the flight leader to ask if the No. 2 aircraft was falling back in the flight. When assured that the integrity of the flight was intact, Center dismissed the incident.

Unbelievable? You bet it is.

Anymouse

Brownout

WE departed NAS Small Island in our UH-1N enroute to the area coordinator's helipad to airlift two Code 5s on a command inspection island tour. The first pass at the LZ revealed that the proper firefighting equipment wasn't in place and that several cows were tethered in proximity to the touchdown point.

After the second pass, the fire equipment was properly placed, and we went through the "bovine-in-the-LZ" checklist. (This is a recurring problem at this pad.)

Approaching a hover, it was noticed that two calves were untethered and behaving irrationally. It was also noted that the cows had *browned out* the concrete touchdown point. We landed anyway, reduced to flight idle, and dispatched cow guards to keep the intruders outside the safety zone.

The combined weight of four stars gingerly evaded the FOD and boarded hastily. Liftoff was accomplished, accompanied by the sound of thundering hooves, and the tour proceeded uneventfully.

Upon return, the last item on the landing checklist, a cowshoo maneuver, was completed; and when on deck, our passengers made a hasty egress.

The problem could have been solved by our refusal to land in an unsecured LZ. Unfortunately, we were temporarily blinded by the sun's reflection on a batch of stars. The owners of the cows have been informed that with the rising cost of steak, they should remove them to safety. The cows routinely graze in the area on tethers, but this was the first *concrete* evidence of their proximity to the touchdown point.

Cowshoomouse

Red Streamer

AFTER what was thought to be a thorough preflight, two hardy souls strapped themselves into the cockpit of their twin turboprop aircraft and began the checklists. Minutes later, they taxied out and were cleared to "position and hold."

The pilot carefully positioned the aircraft in the middle of the runway and, when cleared to go, noticed everything looked good. Just prior to rotation, the pilot's scan took in the mach needle, and much to his surprise, it read zero. Oh, oh!

Quickly, his eyes flicked to the pitot tubes, and sure enough, there was tape, put on before the bird's last bath. The decision to abort was made, and an embarrassed pilot taxied back to the line.

The brakes did heat up, but nothing else occurred. This mouse got off easy with a red face and wonders if that was the first time he'd missed the pitot tube covers on preflight. The answer is SCAN – keep it moving, work on it constantly, and interpret what you see.

Believermouse

A good scan certainly has its place, but a good preflight comes first.

Excess Coffee

PEOPLE who drink more than five cups of coffee a day have about twice as great a risk of having an acute heart attack as people who drink no coffee, say two Boston doctors.

This finding of an association between coffee consumption and heart attacks emerges from the Boston Collaborative Drug Surveillance Program. The physician codirectors of the program at Boston University Medical Center collected vast data on the daily, hot beverage intake before hospital admission of patients with acute heart attacks.

Comparing groups for age, sex, and hospital location, the investigators found no significant differences in tea consumption between the groups. In fact, although heart attack patients consumed more coffee than their counterparts in the survey's control group, they drank less tea.

Examination of data from American and non-American hospitals provided no evidence of any consistent association between tea drinking and heart attacks. Association between coffee ingestion and acute heart attack, however, was present in men and women, in young and old, and in both American and non-American hospitals.

Although the researchers found a strong correlation between coffee drinking and cigarette smoking, this finding could not explain the association between coffee drinking and heart attacks.

There are two possible explanations. The first is that patients who drink coffee heavily and patients who develop heart attacks have similar personalities. Thus, coffee drinking would only be indirectly related to these attacks. A second possibility is that there is a substance (or substances) in coffee other than caffeine which makes individuals who drink coffee heavily more susceptible to developing heart trouble. The investigators rule out caffeine and sugar as explanations because tea drinkers consume similar quantities of both, but no substantial relationships were found between heart attacks and tea.

NAVNEWS Bulletin Board

notes from your flight surgeon

Dunker Training

THE CREW'S training in water survival facilitated their egress from the helicopter wreckage after impact with the water, the investigating flight surgeon states.

Both enlisted crewmen made an underwater escape from an inverted attitude. This closely paralleled the escape technique demonstrated in the Dilbert Dunker.

Happy Hour

"THIS flight surgeon feels that Happy Hours during the week (excluding the traditional Friday Happy Hours) should not be encouraged by the Navy – especially in the aviation community," writes a flight surgeon in his Medical Officer's Report on an aircraft accident.

"I do not condemn drinking *per se,* but I do feel that encouraging the use of alcohol (which, whether admitted or not, Happy Hours do) has no place during the workweek.

"Happy Hour on a Monday merely invites disaster on Tuesday."

Reminders

DARK, moonless night . . . A-7 returning to the carrier . . . ramp strike . . . "uneventful" ejection and water survival before pickup.

"Uneventful," as the investigating flight surgeon reports, but still enough irregularities to warrant consideration for future reference.

The pilot had time on his side. After the ramp strike, he climbed to the top of the overcast with the intention of diverting. He was then vectored to a rendezvous with his wingman for a visual inspection of damage. Ejection became necessary.

For max visibility, he had been flying with his seat full up. In this position, the face curtain handle is behind the helmet and not easily accessible. When he lowered the seat, he realized it was so low that his thighs did not rest on it. So, he raised it and ejected by means of the lower ejection handle. Fortunately, as we said, time did not run out on him.

When the pilot ejected, he was some 50 miles from the carrier. Initial location was by PRC-90 radio beacon which brought four rescuers within a half mile of him – three helicopters and one surface vessel. During his parachute descent, the fact that the PRC-90 was not secured by a lanyard to his survival vest caused him some concern. The 36-inch nylon cord should be tied to the radio and to the grommet on the right shoulder strap of the vest.

The pilot used the only two pencil flares he had before the helos with rescue capability arrived on the scene. (He should have had seven.) Although he had day/night flares in his seatpan, he didn't use them.

Rescue Films

"WHAT films are available on helicopter search and rescue?" somebody asked us the other day.

Maybe he's not the only one who wants to know . . .

Helicopter SAR, sea phase: MN 10912A, unclassified, color, 25 minutes, "Vehicles, Equipment, and Devices for Helicopter Rescue at Sea."

Helicopter SAR, land phase: MN 10912B, unclassified, color, 25 minutes, "Vehicles, Equipment, and Devices Necessary for Ground Rescue by Helicopter."

The crews of the rescue helos couldn't see his strobe light on the right shoulder of his torso harness, probably because it was blocked by his LPA-2 lifevest. Nobody could see his flashlight because of the rain and poor visibility. He was "fortuitously" located when someone finally saw him in the helo's spotlight. (The strobe with velcro hook tape on it should be in the SV-2. The helmet should have velcro pile so the survivor can zap the light to it and free his hands.)

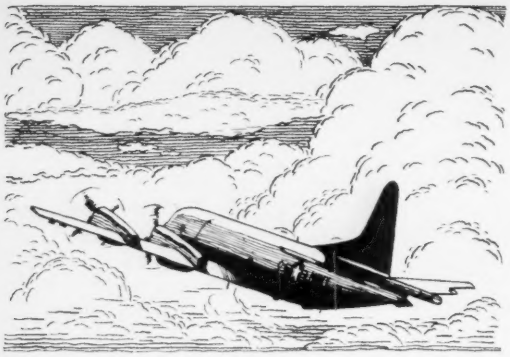
Rescue was not delayed, but it could have been considerably hampered by the survivor's lack of visual locator devices.

After pickup, the pilot remained in his wet flight suit for more than an hour without any way to keep warm because the rescue helo did not carry a blanket. Although water temperature and air temperature were 79° and 78°F respectively, he suffered exposure.

The investigating flight surgeon offers these reminders:

- Survival devices should be secured with nylon cord to survival vests.
- The required number of visual locator devices should be carried.
- All SAR helicopters should carry blankets.

APPROACH comment: *Shipboard Helicopter Operating Procedures, NWP 42,* states that a SAR kit (minimum items: aircraft or adequate first aid kit, resuscitube, blanket, inflatable splints) shall be carried by all helicopters designated as primary SAR vehicles and should be carried by other helicopters. *NWP 42* also requires that rescue boats have onboard a crash kit containing two blankets. ◄



Letters

Temper is what gets most of us into trouble. Pride is what keeps us there.
Ace L.

Talk to Each Other

FPO, San Francisco – The aircraft made a "routine" jet transPac flight of over 1600 nautical miles and landed at an NAF on a foreign shore. During postflight inspection of the lower fuselage area, the pilot discovered a free-flowing fuel leak coming from the forward fuel cell access plate area. The detachment maintenance officer had met the aircraft and was shown the dripping fuel and not-so-small puddle which had accumulated. The leak did not show any signs of diminishing.

The pilot "downed" the aircraft, filled out a VIDS card, and turned it in to the detachment maintenance control desk. At this time, the previous discrepancies listed in the aircraft's "B" book were pointed out to the maintenance control chief. They concerned fuel leaks which had been griped twice out of the aircraft's last four flights.

Later, as the aircraft was being fueled for a scheduled return flight to Homebase, the pilot standing by to man the aircraft was briefed on the fuel leak by the previous pilot. The point made was that the fuel leak was a repeat gripe.

Shortly after, the previous pilot asked the detachment maintenance control officer about the fuel leak and the gripe on the VIDS card. It was again pointed out that the fuel leak was a repeat discrepancy. He replied, "I didn't know there was a leak. The aircraft has been fueled and is down at the terminal waiting for the crew to finish eating so they can launch."

The aircraft made a "routine" flight back to NAS Homebase . . . that time.

Name Withheld

● It's not clear whether or not the fuel leak was repaired prior to the aircraft's return flight to Homebase. Nevertheless, certain questions do come to mind: "Did the returning crew have a case of 'get-home-itis' and elect to take the aircraft despite the fuel leak? Did maintenance control drop the ball by not following through? Did the maintenance officer 'assume' the maintenance control officer had gotten the word?"

Whatever happened, communications *must be improved.* The detachment has not been identified, but it is hoped that they recognize themselves and will shake the complacency out of those directly concerned.

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request.

Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, Va. 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

Re "Debating Society"

FPO, New York – Regarding the Anymouse in the APR '74 issue, I think both sides of the debate, and even the editor's comment, leave room for improvement. The whole debate can be settled by referring to OPNAVINST 3710.7G (General NATOPS) which states, "In the absence of *direct orders* from higher authority who is cognizant of the mission and *urgency* of the flight, the responsibility for starting or for continuing a naval flight with respect to

weather or any other condition affecting the safety of flight rests with the *pilot in command* of the flight."

The editor commented that "the play has to be called by the quarterback (ops) or the COach, not by free and open jive in the huddle." In football, the quarterback can call a play that is approved by the coach, and the players will respond to that play. In flying, the Ops officer schedules a flight that the CO has approved, but it is then up to the pilot in command to pass judgment on the flight with respect to factors affecting its safety unless he is given *direct orders* to fly an *urgent* mission.

Weathermouse is upset because the leaders in his command wouldn't tell him *not to fly.* If the leaders didn't want him to fly, they would've left him off the schedule. Weathermouse is perfectly within his rights to cancel a flight for hazardous weather and shouldn't hesitate to do so. That is normally *his* decision to make.

On the other hand, the CO, XO, and Ops officer could take some of the pressure off their pilots (particularly the

tigers – see "Hemotigersuperfluous" on pg. 25 of the April issue) in those cases where the weather is worse than marginal, by canceling the flights themselves. This would prevent the overeager tiger from getting in over his head.

You're right. It does sound like a rinky-dink outfit. Perhaps all concerned should sit down and discuss the rules we fly by.

CDR Victor S. Gulliver
CO, VP-49

Only Skin Deep

NAS Memphis – Re the article "Only Skin Deep" in the APR '74 APPROACH. I feel the cause of this accident is a great deal more than a poor patch job by an intermediate level maintenance activity. During the 5½ years of service following the patch job, the aircraft had been inspected on several occasions, and I'm sure it had completed at least one PAR cycle. Responsibility for this accident, in my opinion, must be shared between the intermediate maintenance activity and subsequent activities involved with either inspecting or performing maintenance on the aircraft during PAR.

CAPT Duane L. Varner
Navy Human Resources School

Foolproof

Milford, NH – In a time of fiscal crisis, it's important to explore all possibilities for cutting operating costs without sacrificing performance. The photo shows a low-cost device for preventing aircraft from running off the end of a runway, without resorting to expensive arresting gear.

Arthur R. Edgar

Cross-checking Instruments

Bethpage, NY – In the Anymouse section on pg. 27 of the March issue, there's an article on cross-checking instruments involving an A-6. It notes an altimeter error that was not noted until 700 feet. I note a lack of crew coordination as indicated, but also a lapse of the B/N not utilizing an altitude source available to him – the weapon system readout of altitude. I make it a practice to cross-check the radar, pressure altimeter, and system altitude passing approximately 5000 feet. At this time, the radar altimeter should ring in, and all three should be approximately the same. If not, *then* is the time to take remedial action rather than at 700 feet. It's been a while, so I don't know if this is taught in the RAG or not.

LCDR Wayne Robinson
NAVPRO Bethpage
Grumman Aerospace Corporation

● **"Derived Present Position Altitude" is taught as the third source of altitude information.**

APPROACH vs PLAYBOY

Fleetsville – In the APR '74 APPROACH, Letters section, a Commander took you to task for using a honey on the back cover. Now hear this:

Dear Commander:

I disagree with you wholeheartedly. One of the ASO's biggest problems is to get his message across. If someone picks up a safety pub because of an alluring beauty, I say give us more. Who knows, the picker-upper might even read an article after he has the magazine in hand. I confess to reading an article in *Playboy* – after memorizing the pictures.

I'd love to see an aviation safety article in *Playboy*. Overexposure (pun intended) in the interest of safety is always welcome. I'm sure if APPROACH included a centerfold, people would be streaking to the safety office for each issue. If a *Gallery* of cheesecake photos will make the *Escapades* of our daring *Cavalier* aviators safer, I/*Oui* say *bring on the bakers!*

L. C. DeAre

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RADM W. S. Nelson
Commander, Naval Safety Center
Publisher

Our product is safety, our process is education and our profit is measured in the preservation of lives and equipment and increased mission readiness.

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COVER: R. G. Smith compares the A-4D-1 with the A-4M in his "Firstest with the Latest." This year marks the 20th anniversary of the first Douglas *Skyhawk* flight – on 22 June 1954 at Edwards AFB, California. (Cover – courtesy McDonnell Douglas, Long Beach.) **Pg 22** photo: Floyd Sykes.

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Cockpit Coordination or Chaos

By LCDR D. A. Mohr

DID you hear what happened to Bill the other night? I understand he was lucky *(read* **fully prepared** – *Ed.)* enough to fly his SH-3 single-engine right out of an ASW hover. He must have gone to church Sunday. Man, some guys sure live right.

The examination of several helicopter model NATOPS manuals discloses only one situation where actions for all crewmen are specifically delineated – *ditching.* In all other situations, the crew may do as little or as much as briefed. The responsibility rests with the pilot in command.

If you as HAC do not choose to assign specific tasks in your brief, you must be prepared to fly the aircraft, handle the emergency procedures, and issue necessary orders while the whole world is going ape. No doubt, you expect professionalism from everyone when the chips are down, but you must set the pace professionally.

This does not imply that this same pilot might not be a stickler for detail in his mission-profile briefings. But just consider how much a simple policy statement serves to clear the air, like "I'll take the aircraft in any emergency." Of course, telling the copilot what you want is no guarantee of success, but it's easier to monitor what he's doing than to tell him step-by-step during the emergency. For example, a PPC wanted to wave off an approach and hollered to the 2P, "Takeoff power," and to his chagrin, the copilot literally *took off* power.

Certainly, we can't be expected to prebrief on every eventuality. Nevertheless, it's equally unwise to consider "it will never happen to me, so why sweat it?" In much the same manner as a boxer has conditioned reflexes, the pilot is armed with a host of NATOPS solutions.

It is not wise to act in haste because, on occasion, haste has compounded rather than alleviated a hairy situation. Often, speed may mean proficiency, but too much speed may be worse than no action at all.

None of the NATOPS procedures are required to be completed in X-seconds. For example, the indication of a loss of engine oil pressure cost us a CH-46 as the HAC followed procedures to the letter in securing an engine. Unfortunately, he had not assured that he had single-engine capability. He didn't. And everyone knows about the numerous cockpit goofs which have resulted in a pilot or flight engineer punching out the good engine.

Helicopter pilots have had problems with night takeoffs from carriers and nonaviation ships since the first attempt was made. Few helicopter evolutions are more demanding and require more crew coordination. Another H-46 and an H-2 were lost as both dual-piloted aircraft flew into the water at night on separate occasions. The H-46 mishap board surmised "that the *Sea Knight* pilots were both apparently engrossed in switching radio frequencies prior to the crash." In the *Sea Sprite* mishap, a RAG pilot observed that a crash was imminent from several cockpit indications, but failed to assume control.

In both instances, the H-46 HAC and the H-2 IP were reluctant to act or delayed acting until too late. Copilots, it can be fatal to have such blind faith in your plane commander. It behooves both pilots to be wary especially since there isn't much time to initiate corrective action (if needed) from 300 feet.

An outstanding pilot I knew in the ASW business used to always brief his copilot as to his overwater intentions among others. He used to select a specific "hard altitude" he would not penetrate, make all turns standard rate, and fly no airspeeds below advertised climb/descent schedules – except on approach. He had his copilot handle all radio and TACAN channel changes and sing out airspeeds and radar altitudes on shipboard approaches. The copilot was briefed to assume control of the helo if any of the HAC's parameters were exceeded. Everyone who flew with him knew what the rules were and what was expected of them if the rules were busted.

Communicate . . . Cooperate . . . Survive.

MARINES